



THE RADAR POST

NWS GOODLAND'S NEWSLETTER SINCE 2017



Volume 6, Issue 1

Spring 2023



Message from the MIC



I would like to take a moment to introduce myself, my name is Jeremy Martin and I am the new Meteorologist in Charge (MIC) for the Goodland office. I am humbled to have the opportunity to serve all of you and help provide the best service possible for many years to come. My career in the National Weather Service has spanned the last 21 years, with 19 years being a meteorologist here at Goodland. For the past 11 years I have served as the Science and Operations Officer, primarily focused on training and research. While I would like to say I am familiar with the weather out here, I think we can all agree that the weather seems to always be in a state of change!

While much of the area is recovering from an intense drought, recent heavy rainfall has certainly helped in many locations. Some of the more intense storms produced over five inches of rain in a few hours, unfortunately leading to significant flooding across Southwest Nebraska and nearby areas. In fact there were multiple swift water rescues in Stratton, NE, and the community of Herdon, KS was temporarily cut off by floodwaters for an extended period. Severe weather season has begun with our first tornado outbreak of the season occurring on May 11th. Fourteen tornadoes were confirmed during the afternoon of May 11th, with Weskan, KS being struck with an EF-1 tornado in the evening. Thankfully no deaths or significant injuries were reported.

As the MIC at Goodland, I will ensure that the office's services continue to evolve and meet all of your needs. Aside from researching past events, we will be working closely with our partners to help tailor the information we provide to be the most effective. Additionally, we look to expand our interpretive services to include long range and seasonal forecasting to aid in the Climate Ready Nation initiative. I encourage all of you to keep in touch and provide your feedback as the office continues the NWS mission to "protect lives and property".

-Jeremy Martin, Meteorologist-In-Charge

INSIDE THIS ISSUE

- [1](#) Message From the MIC
- [3](#) Come Visit Us!
- [4](#) Meet A Met (Jason Neilson)
- [5](#) Winter Season Review
- [8](#) Severe Weather Safety and Preparedness
- [12](#) Is Your Weather Radio Ready For Severe Weather Season?
- [13](#) Building An Emergency Kit
- [14](#) Landspouts: What Are They And Why Should You Care?
- [16](#) Climate Corner
- [20](#) Weather Ready Nation Ambassador News
- [24](#) Useful Links and Contact Us!

Come Visit Us!

Over the past two years we have been unable to host tours. However, that has changed. We are now able to host tours, whether for an individual, a family, or an entire class of students. We look forward to showing you how we put the forecast together, discuss severe weather safety with you, demonstrate our tornado and Van de Graf machines, or even show you how a severe thunderstorm or tornado warning is issued.

If you are planning a visit to our office, please call ahead so we can ensure there will be someone available to show you around. Plus this helps us ensure the weather won't prevent us from giving you a tour.

If you have any questions, please send us an email at nws.goodland@noaa.gov or call us at 785-899-7119. We look forward to meeting you!

Meet A Met

Jason Neilson



Jason Neilson hails from a small town in southwest New Hampshire called Jaffrey. Although he spent part of his childhood in southwest Connecticut, he considers Jaffrey his hometown. Jason went to college at Plymouth State College, now Plymouth State University, in Plymouth, New Hampshire. Plymouth is located in the center portion of the state, in the White Mountain region. After college, Jason joined the Navy and during his three years in active duty, he visited three continents and spent considerable time in the Mediterranean Sea. For the last 25 years, Mr. Neilson has worked for the National Weather Service, the last 9 of which have been here in Goodland, Kansas. Before he moved out here, he worked at the Weather Forecast Office in Burlington, Vermont.

In his spare time, Jason likes to relax and do projects around his home. Short trips are also one of his hobbies, if the weather permits. He would like to visit all 50 states, England, and Ireland. Perfect weather for Jason is a sunny 70-75 degree day with some light wind. An autumn day of 45-50 degrees with a light northerly wind is a close second; it appeases his New Englander side. The scariest weather that Jason recalls seeing was back in 2016 when a storm came through town and produced baseball sized hail and 80 mph winds. Jason finds motivation in individuals who persevere through the ups and downs of life, such as folks who survive through major storms, rebuild, and continue on. Music from the 1980s is what Jason likes to have on the radio, especially rock and easy listening genres.

Winter Season Review

By: Kyle Knight

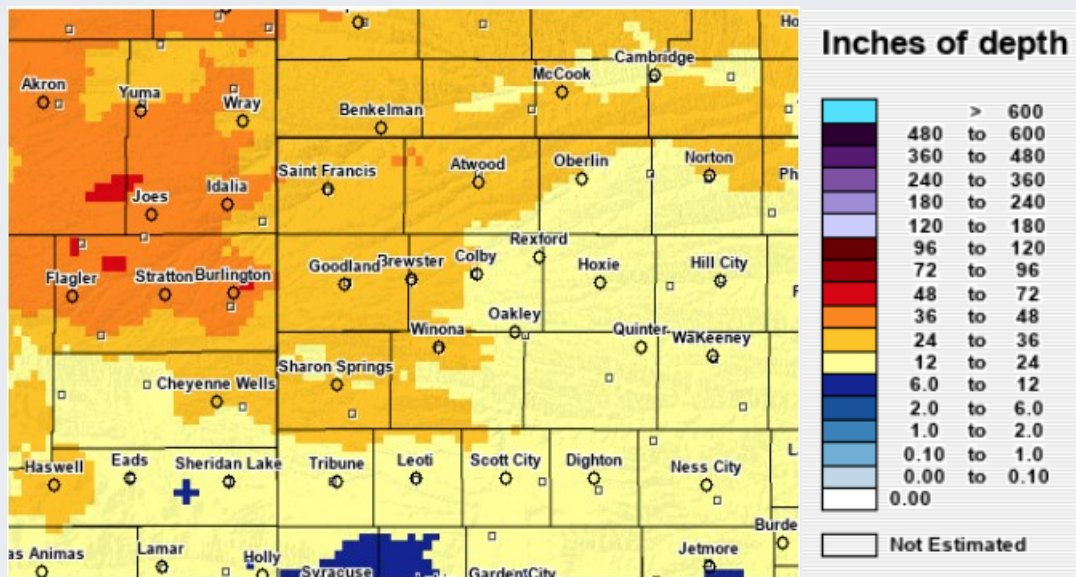


Image of snow falling at the NWS Goodland office on February 15th, 2023

Compared to last season, this winter was more eventful as we had multiple snow and icing events, with parts of the Tri-State Area estimated to have received nearly four feet (48 inches) of snow in total for the season. The rest of the area received at least a foot of total snow for the season. The office had 21 straight days with an inch or more of snow on the ground. This ended up being tied for the 14th longest stretch of days with an inch or more of snow on the ground (Jan. 18th to Feb. 07th). What was also impressive with this stretch was how much snow was on the ground, as the office set the fifth longest stretch with three or more inches of snow on the ground (Jan. 19th to Feb. 06th).

As already mentioned, the more active winter also brought us multiple icing events, with a couple in January and a couple in March. Thankfully, most of the totals were 0.05" or less of ice, but it was just enough to cause traffic problems, especially in March with multiple accidents reported from the freezing drizzle. The highest accumulation ended up being in Wray, Colorado on Jan. 17th when freezing rain led to 0.12" of ice in parts of the town.

Continued next page...



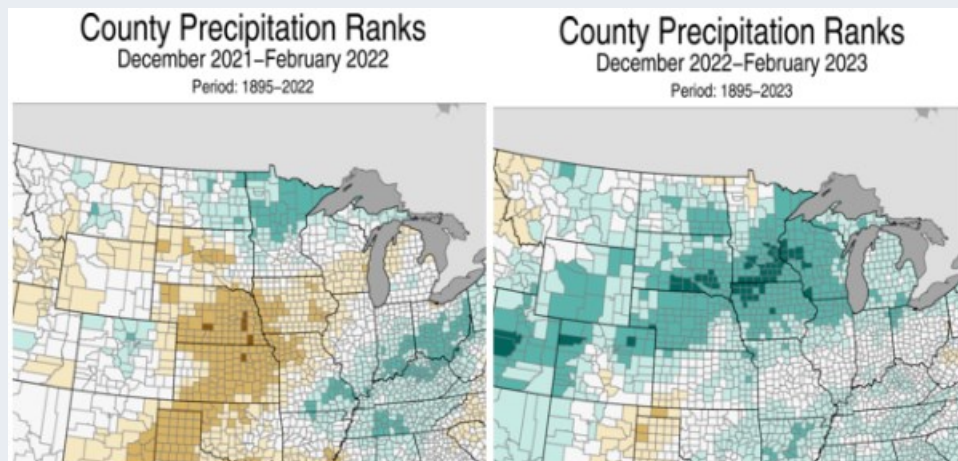
Picture of season total snowfall from NORHSC of the Tri-State area. As of Mar 20, 2023.



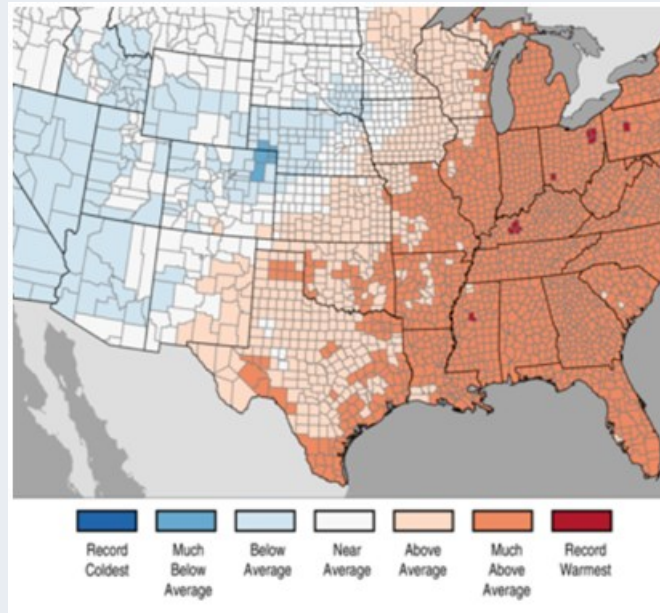
Left Picture: Ice in office tree Jan 19th.



Right Picture: Ice on car windshield Mar 09th.

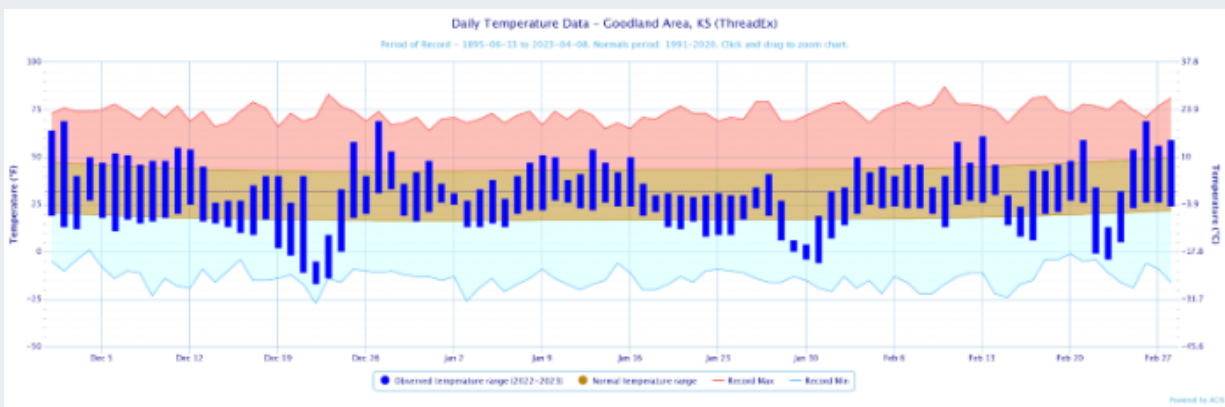


Left map is precipitation ranks for last season,
 Right map is precipitation ranks for this season.
 Dark brown colors represent drier than average, white is near average, darker blue colors represent wetter than average.



*The map shows temperature ranks compared to average for the season.
Most of the area saw near to below average temperatures.*

Finally, temperatures over the winter were near to slightly below average. Generally speaking, the average temperature for winter is roughly around 30°F for most of the Tri-State Area. For most of the season, temperatures were generally hovering around average with very few cold or warm spikes. There were only two record cold events across the area recorded during the season, with both of them occurring at Goodland on December 22nd and 23rd (record low max of -5°F and record low of -14°F respectively). This doesn't mean that there weren't colder periods, as we did have another February instance of wind chills of -25°F. It was just that the area saw an average winter



Recorded temperatures for Goodland, Kansas from December through February. Red area is above average temperatures, the brown area is average temperatures, the light blue area is below average temperatures and the blue bars are the observed temperature range for the day.

Severe Weather Safety and Preparedness

By: Tyler Trigg

With severe weather season upon us, it's important to take time now and review severe weather safety information, as storms and flash flooding routinely affect the High Plains during this time of year. Some people would make the assumption that tornadoes kill and injure the most people each year. In reality, flash flooding has taken more lives than any of the other severe hazards. In preparation for the severe weather season, a brief overview will follow about each of these severe hazards, along with a review of safety information to mitigate the risk of each one.





Flash Flooding

Never drive through flooded areas, especially during the night. What looks like a small amount of water on the road could be several inches or more deep, or the road underneath could be completely washed away. Only 6 inches of moving water can knock an adult over and carry them away, and only 18 inches of moving water can carry away most SUV'S and trucks. If you do encounter flood waters, whether it be storm spotting or just a casual drive, just turn around and find a different route to your destination. If you are at home during a flood, the same rules apply: do not walk into standing water. You never know what could be hiding in the floodwater. Snakes or other animals, debris, or power lines could all be in the water and create additional hazards.

Continued next page...

**3 SIMPLE STEPS FOR
FLASH FLOOD SAFETY**

During a flood, water levels and the rate at which the water is flowing can quickly change. Remain aware and monitor local radio and television.



[weather.gov/flood](https://www.weather.gov/flood)

- 1 GET TO HIGHER GROUND**
Get out of the areas subject to Flooding
- 2 DO NOT DRIVE INTO WATER**
Do NOT drive or walk into flooded areas. It only takes 6" of water to knock you off your feet.
- 3 STAY INFORMED**
Monitor local radar, television, weather radio, internet or social media for updates.

Hail and Wind

During the severe weather season, especially here on the High Plains, all severe weather warnings need to be taken seriously. Hailstones can be damaging to your property, and be potentially life threatening. Hailstones can vary in sizes from peas to grapefruits or even larger! For example, a 3 inch hail stone can fall from a severe storm at a rate of over 100 miles per hour. Damaging winds can be just as dangerous as hail, producing gusts equivalent to an EF1 tornado. Damage from severe thunderstorm winds actually account for half of all the severe reports in the 48 contiguous states.

If at home and severe winds are forecasted to occur, you can stay safe by avoiding exterior or upper level rooms in your house. During high winds tree damage can occur and impact homes, so stay away from windows. If you are out driving, slow down and keep both hands on the steering wheel at all times to avoid being blown off the road.

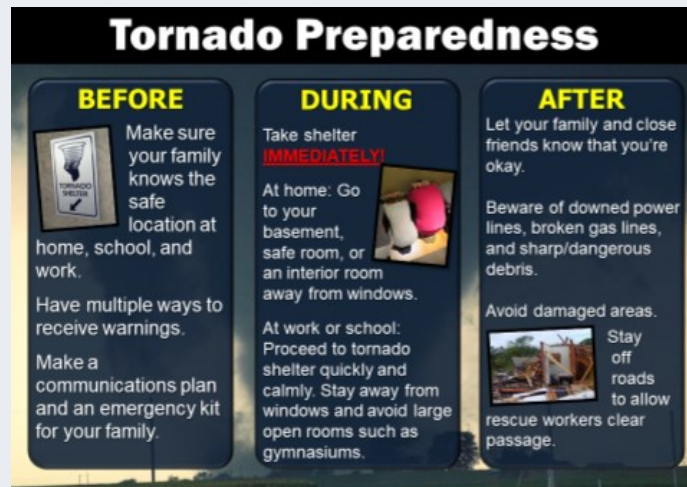
Damaging Hail

Take Severe Thunderstorm Warnings Seriously!

- Hailstones can vary from pea size up to grapefruit size or larger
- The larger the hail, the stronger the thunderstorm
- A 3 inch hailstone can fall to the ground as fast as 107 mph!
- The largest hailstone recorded in the U.S. measured 7.9 inches



Find shelter, stay indoors, and stay away from windows!

Tornado

Tornadoes may be one of the most well known and interesting severe phenomena. The most dangerous part of a tornado is the debris blowing and falling from the sky. If you are at home, go to your basement or the most interior room of your home on the lowest level that has NO windows. Never go to the top floor or exterior rooms of your home, as they will not protect you due to the risk of collapsing walls or floors. If possible, have an emergency supply kit with anything that will assist you after the storm including water, nonperishable food, flashlights, and even shoes.

If caught outdoors, you should seek shelter in a nearby basement, sturdy building, or storm shelter. If none of these are available, or nearby, immediately get into a vehicle and drive to the nearest sturdy shelter. However, never try to outrun a tornado! If possible, out maneuver the tornado by driving away from its path at a right angle. If flying debris occurs while driving and there is no shelter nearby, pull over and park, make sure your seatbelt is on, put your head below the windows and cover your head.

After a tornado, be aware of your surroundings such as any downed power lines, broken gas lines, or sharp objects.



Continued next page...

Lightning

Many people are familiar with what comes from thunderstorms such as tornadoes, hail, and wind. Lightning may be fun to watch, but it is actually one of the most underestimated hazards of any thunderstorm, as it is one of the nation's deadliest weather phenomena. Since the National Weather Service does not issue warnings for lightning, people need to be more cautious about it when thunderstorms approach. If you hear thunder, go inside until 15 minutes after the last rumble of thunder, as thunder can be a precursor to lightning. If you are outside at the ballfield, or some other event, and can't get home before lightning arrives, go to your car, roll up the windows, and keep all body parts inside until the storm passes. The metal shell and frame of the car will protect you from lightning strikes. During this severe season, just remember the simple saying "When Thunder Roars, Go Indoors".

Is Your Weather Radio Ready For Severe Weather Season?

By: Jesse Lundquist



Severe weather season is here. Having a weather radio is the best way to receive vital weather information. If you don't have a weather radio, one can be purchased at many of the local stores or online.

To ensure your weather radio is ready for spring, make sure the batteries in it are in good condition, should power go out. If the low battery indicator is flashing, or shows the battery is mostly used, put new batteries in. Place the weather radio in a location in which the alarm can be heard from any part of the house.

If you only wish to be alerted for a specific county or counties you can program your weather radio to do just that. Visit these websites for the SAME codes that may be needed to program specific counties into the weather radio (Click your state if viewing online: [KS](#), [NE](#), [CO](#)).

To program your weather radio for a specific county or counties using the Midland brand radio:

1. Press "Menu" then use the up and down arrows to find "Set Location".
2. Select "Set Location".
3. Use the up and down arrows to select either "Single" or "Multiple". (Multiple can store up to 25 counties)
4. Once "Single" or "Multiple" are selected, "SAME XX" will appear. Push "Select" again.
5. Use the up and down arrows and the left and right arrows to input the SAME codes for each county. (If your weather radio is newer you may be able to simply select the state and county you want alerts for instead of inputting the SAME code)
6. Once finished inputting the SAME codes for the desired counties, push "Menu" twice to exit and save.

[Here](#) is a link to a video illustrating how to program a Midland weather radio. If you have any questions about programming your weather radio, please contact our office.

Building An Emergency Kit

By: Tyler Trigg

After a disaster, chances are you may be on your own for a few days. Being prepared means having enough supplies to last for at least 72 hours. This includes having your own food, water, and other supplies that you may potentially need for several days.

A disaster supply kit is a kit of all the potential items that one may need in the event of an emergency. After assembling your kit, be sure to keep it maintained so it's ready for the next emergency. Be sure to keep any canned food items in a cool, dry place. Replace expired items as needed. Be sure to rethink your needs every year and update it as your family's needs change.

Since one never knows where you will be when an emergency arises, if possible keep an emergency kit in your car, home, and at work. Some basic items to consider for each include water, food, flashlight, cash, first aid kit, and local maps.

For additional tips and materials about making a disaster kit, please visit <https://www.ready.gov/kit> and <https://www.ready.gov/car> for items to include in an emergency kit for your vehicle.

Emergency Kit

Make sure your emergency kit is ready to go!

- ✓ First Aid Kit
- ✓ 3 day supply of water/non-perishable food (for each family member including pets)
- ✓ Change of clothes/shoes for each family member
- ✓ Prescription medicine & special needs items
- ✓ Battery powered radio & NOAA Weather radio
- ✓ Cash & credit card
- ✓ Flashlight & extra batteries
- ✓ Whistle (to call for help)
- ✓ Cell phone & charger (solar/battery powered)



Landspouts: What Are They And Why Should You Care?

By: Kyle Knight



Image of a landspout tornado taken by the Colorado State Patrol. Photo Credit: @CSP_Limon

If you heard the term “Landspout”, did you know that it was referring to a tornado? A landspout is a tornado, but it does not require a rotating updraft or organized storm in order to form. Oftentimes, these tornadoes form at the beginning of a storm’s life cycle, even before the storm appears on radar imagery. They tend to form along a surface boundary (front, dryline, surface wind convergence line) on warm days. They then take rotation that is at the ground and stretch it vertically with the storm’s updraft. This rotation is generally not too strong or noticeable when it is at the ground. However, the rotation does strengthen as it is stretched from the ground to the cloud (think of a figure skater spinning with their arms out and then pulling them in). The stretched rotation is now faster because it is attached to the cloud’s updraft, causing a tornado to form.

Landspouts are tied to the boundary and/or updraft they form on. As such, they tend to have shorter durations and tracks. Instead of a tornado moving 5-10 miles for 15-30 minutes, these tornadoes often have tracks of a few hundred to few thousand feet, and durations generally under 5 minutes. **This does not** mean that they are not any



Example of how a landspout forms.

Continued next page...

tornado, as landspouts have been documented to cause EF3 damage. Generally it is their short track and duration that limit how much damage they can cause. There are rare cases as well when landspouts have lasted for 10+ mins or over a mile.

So what do you do when a landspout occurs near your location? Since they are tornadoes, be alert and ready to take shelter in a sturdy structure should they form. Given their limited duration and quick development, they can be a bit tricky to prepare for. If you are in the NWS Goodland County Warning Area, you need to be looking for forecast information the day landspouts may occur, and stay alert for either a Landspout Alert/Watch or a Tornado Warning. If there is the possibility for landspouts, generally a forecast discussion and forecast graphic are sent out to show where landspouts are possible. If conditions become favorable for landspouts to form, or a few brief landspouts have been spotted, a Special Weather Statement will be sent out that will mention landspouts in the title. The statement will also give information about the location and duration of additional landspouts. If a landspout is more persistent/well reported and/or moving near a town or I-70, a tornado warning will be issued instead.

```

@
315
WMA583 KGLD 231930
SP5GLD

Special Weather Statement
National Weather Service Goodland KS
130 PM MDT Sat Jul 23 2022

COZ090-KSZ001-002-NEZ079>081-232030-
Yuma County CO-Rawlins KS-Cheyenne KS-Red Willow NE-Hitchcock NE-
Dundy NE-
130 PM MDT Sat Jul 23 2022

...Brief Landspout Tornadoes Possible...

At 128 PM MDT/228 PM CDT/, conditions are becoming favorable for the
development of landspout tornadoes in and close to a line from
Culbertson and Benkelman, Nebraska to St. Francis Kansas to Kirk,
Colorado. However, at this time it is unknown which if any one storm
will produce a landspout. Any landspouts which develop are expected
to pose a limited threat.
```

An example of a Landspout Alert/Watch issued on July 23, 2022.

Regardless of which product is issued, any landspout will pose a hazard and can cause damage.

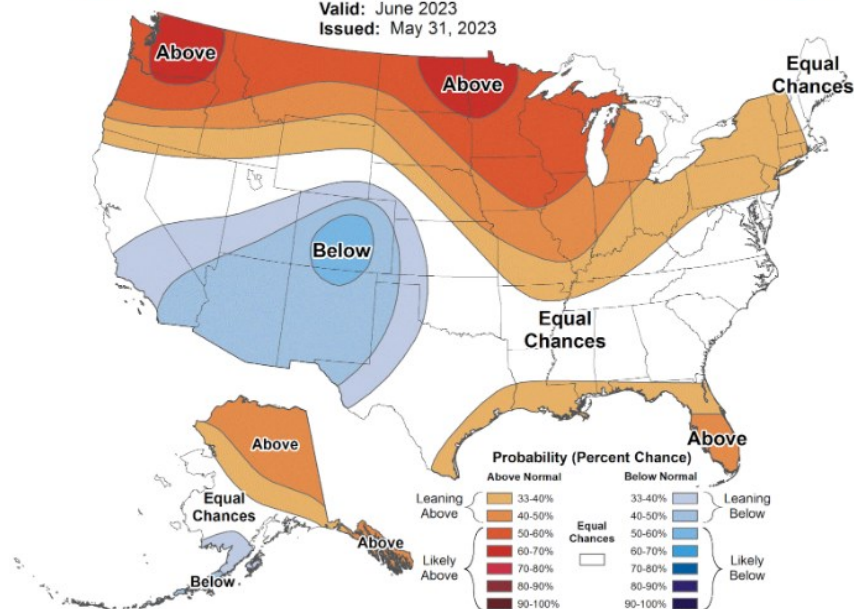
Make sure to stay alert and know where your shelter is should landspouts be possible!

Climate Corner



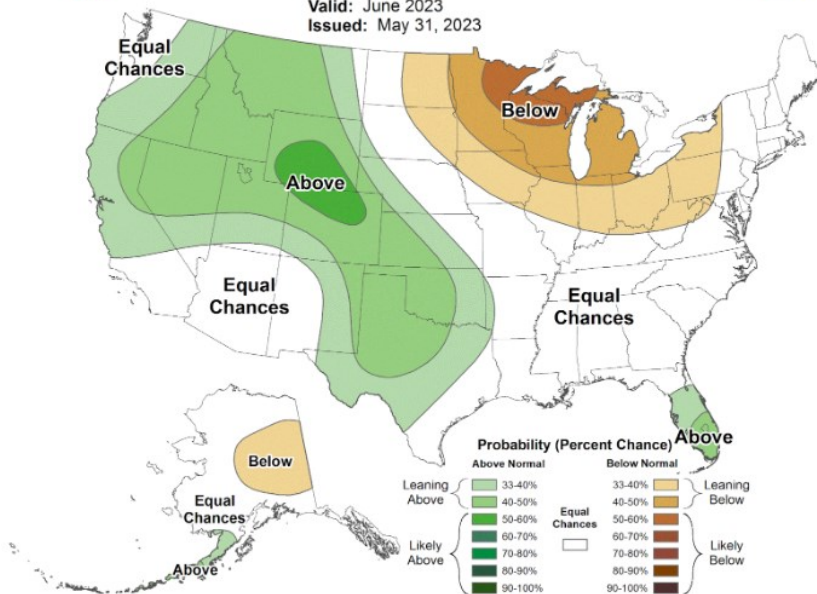
Monthly Temperature Outlook

Valid: June 2023
Issued: May 31, 2023



Monthly Precipitation Outlook

Valid: June 2023
Issued: May 31, 2023



Continued next page...

One Month Summary

The outlook calls for near to below average temperatures and above average precipitation for the month of June. The area averages around 3 inches of precipitation and highs in the mid to upper 80's.

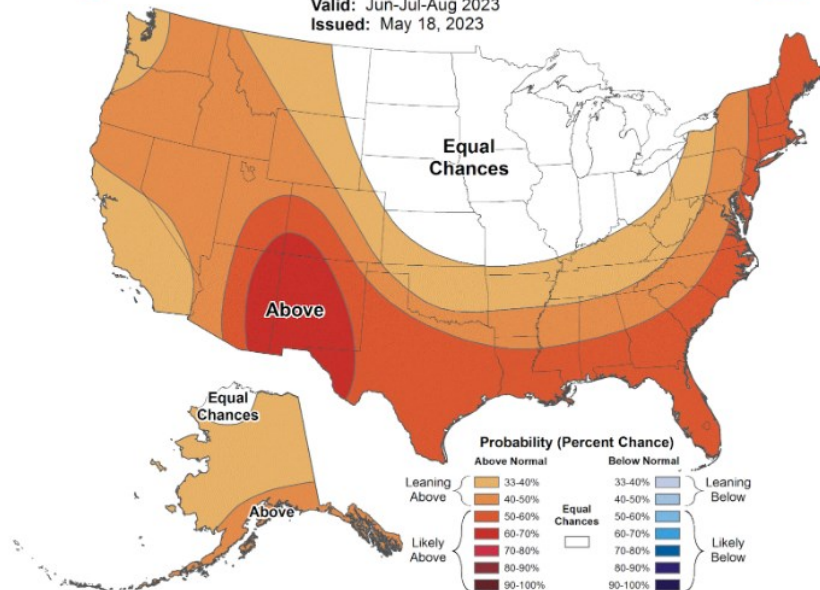
Climate Corner



Seasonal Temperature Outlook



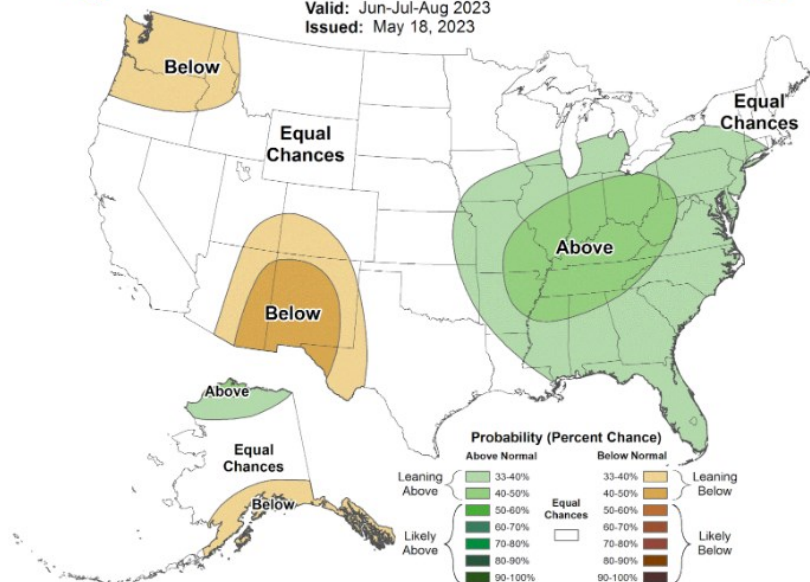
Valid: Jun-Jul-Aug 2023
Issued: May 18, 2023



Seasonal Precipitation Outlook



Valid: Jun-Jul-Aug 2023
Issued: May 18, 2023



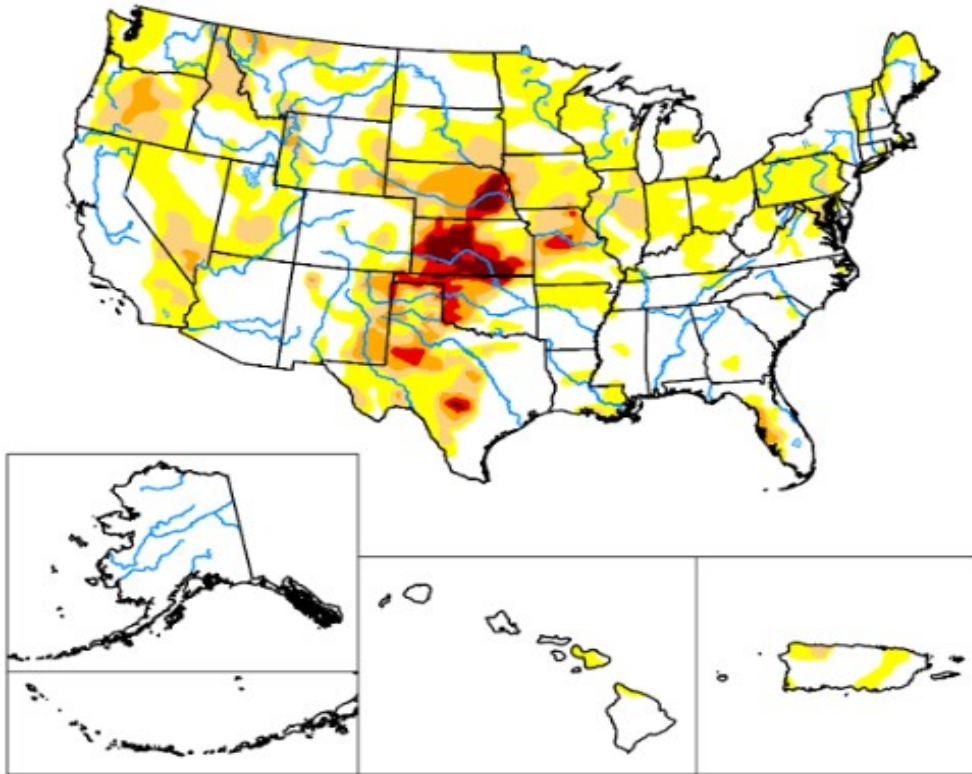
Continued next page...

Three Month Summary

The three-month outlook calls for near to above average temperatures and an equal chance of below/above average precipitation across the area.

U.S. Drought Monitor
U.S. States and Puerto Rico

May 30, 2023
 (Released Thursday, Jun. 1, 2023)
 Valid 8 a.m. EDT



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Richard Heim
 NCEI/NOAA



droughtmonitor.unl.edu

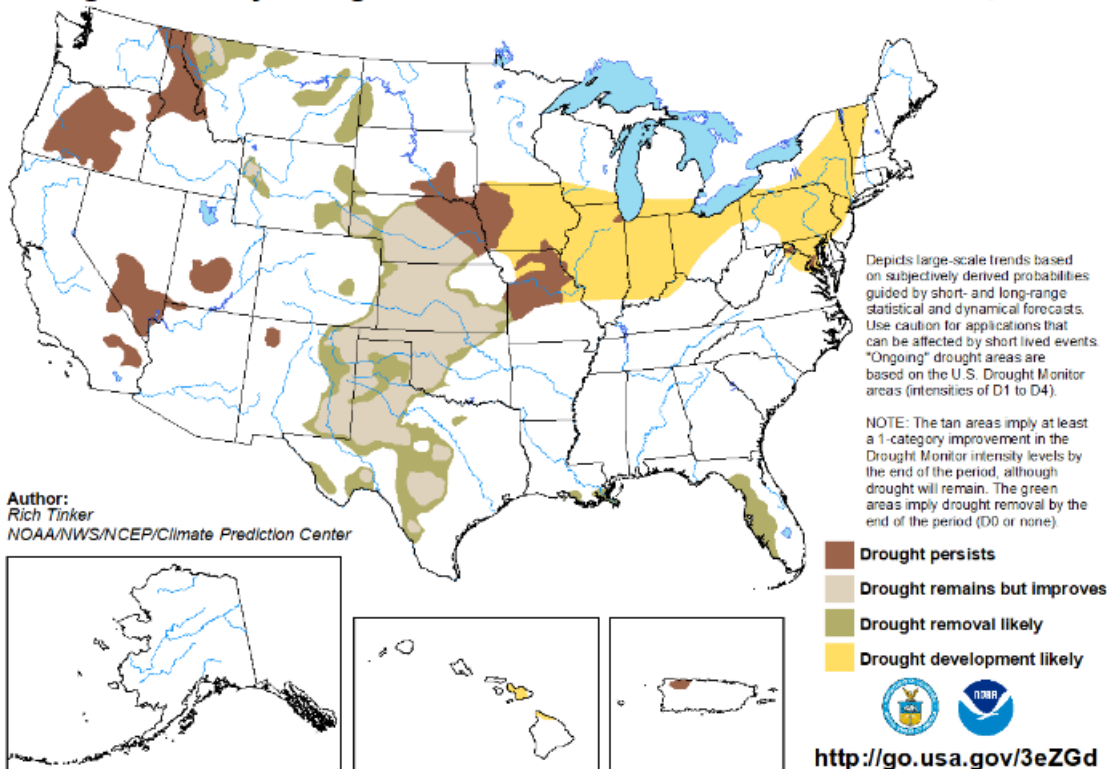
The latest U.S. Drought Monitor shows the Tri-State Area having drought conditions between the D0 and D4 intensities with a good portion of the Colorado counties no longer experiencing drought.

City	Year to Date* Precipitation (in.)	Normal Year to Date* (in.)	Departure from Normal (in.)
Goodland	8.32	6.61	+1.71
Burlington	7.10	5.71	+1.39
McCook	14.02	6.87	+7.15
Hill City	5.35	7.61	-2.26

Data as of June 4, 2023

U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

Valid for June 2023
Released May 31, 2023



The latest U.S. Seasonal Drought Outlook shows that drought is expected to remain though improve generally for most of the Tri-State Area, with portions along the Colorado border seeing drought removal likely if that have are not already removed from drought status.

**A little water can show how
little water there is around it.**

Show us what it looks like around you

Submit photos to the **Condition Monitoring
Observation Report** database.

go.unl.edu/cmor_drought

NDMC
NATIONAL DROUGHT MITIGATION CENTER
UNIVERSITY OF NEBRASKA



WRN Ambassador News

Message from the WCM

We are entering our most active time of the severe weather season. As such we need to ensure we are prepared for what the severe weather season can bring us. Before any severe weather watches or

warnings are issued for your location, please ensure that you have more than one way to receive vital weather information, especially if power is knocked out. One of the best ways to receive weather information is through a weather radio. Ensuring the weather radio has batteries will allow you to receive weather information when the power is out.

Something else to consider is an emergency kit. These kits can be as simple or as elaborate as you see fit for your situation/family. Some items to consider including in a kit are:

- Non-perishable food (and a can opener)
- Cash
- Cell phone charger for a vehicle
- Medications
- Baby wipes
- Helmet
- Whistle
- Closed toe shoes
- One gallon of water/person per day



Willoughby Owen
June 8th, 2019

One last step to ensure you and your family are prepared for severe weather season is to have a place at home in mind that you can go to to be safe from damaging winds or tornadoes. This is especially important if you live in a mobile/manufactured home as many tornado fatalities these days occur in those structures. Be sure to practice going there, whether it is at your home, a neighbor or friend's house, or a community shelter, as a family so everyone knows where to go before the weather becomes dangerous.

Lastly, if you see severe weather occurring, please let us know. Your reports are incredibly valuable to us during severe weather operations. Weather reports from spotters and the general public provide confirmation that the threat is occurring. These reports help us update are warnings, including stronger wording which is more likely to prompt people to take action to stay safe. Even weather reports that are below severe thresholds (severe being 1" hail and 60 MPH winds) are very helpful to us. These reports help us know when not to issue a warning, which can be more difficult than issuing a severe thunderstorm or tornado warning.

No matter where you are, be sure to stay weather

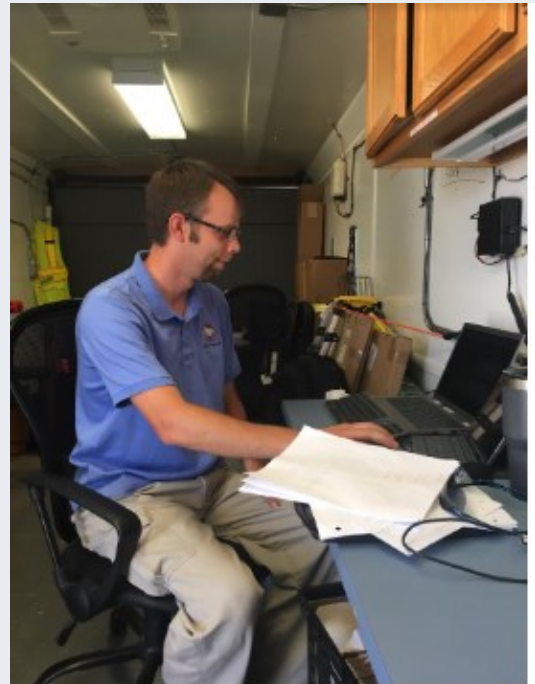
-Ryan Husted, Warning Coordination Meteorologist

WRN Ambassador News***Preparing For Fair Season AND Other Summer Activities?******So Is NWS Goodland!*****By Kalitta Kauffman**

Did you know that your county's Emergency Manager can request Decision Support Services (DSS) for your community event? The National Weather Service is able to provide weather support for a variety of events from fairs to air shows. This weather support can be provided remotely from our office or on-site if requested.

What goes into DSS and event support you may ask? Once the county's Emergency Manager requests support for the event, the information and location is able to be overlaid on our radar screens. If severe weather is approaching the location, we are able to give a heads up call to the point of contact that people need to get to safety. We also provide briefings prior to and during the event if requested, so the most up to date forecast information can be utilized to protect those enjoying the activities. If we have a staff member at the event, weather information will be relayed directly to decision makers.

If you have any questions about DSS support for your event, feel free to give us a call at (785) 899-7119.



Jesse Lundquist, Lead Meteorologist, provides on-site support at the Colby Air Show June 18, 2022

WRN Ambassador News***In-Person Spotter Training Returns!*****By Kalitta Kauffman**

For the first time since 2020, the National Weather Service (NWS) office in Goodland was able to host the annual public storm spotter training classes in person! This year, NWS Goodland hosted 20 in-person classes across the entire Tri-State Area between late February and mid April. Training this year lasted between an hour and a half to two hours, with several interactive opportunities for those in attendance.



Meteorologists Kalitta Kauffman and Tyler Trigg (left-center) were guests on Coyote Country 105.3 Coffee Club show on February 17, 2023. Image courtesy of Coyote Country

Highlights from this year's training included new pictures and videos to help highlight storm features such as the updraft, rotation of the updraft and wall cloud, and determining whether or not there was a tornado. The Goodland staff also put together a small reporting exercise to help our spotters feel more comfortable and confident when contacting the office.

With a need to update our spotter database, NWS Goodland had a goal of having as many people attend the classes as possible. Advertising efforts included articles in local newspapers, numerous social media posts, county specific posters, and an updated web page where one of our meteorologists tested out ArcGIS StoryMap to create a visual map of our training locations. NWS Goodland also worked with our local radio stations to record sound bites. In February, Meteorologists Tyler Trigg and Kalitta Kauffman were guests on the Coyote Country 105.3 Coffee Club radio show in McCook, Nebraska to help promote the classes in our northeast corner of the area.

Continued next page...

WRN Ambassador News

Warning Coordination Meteorologist Ryan Husted was also a guest one morning on KLOE in Goodland with host Curtis Duncan. NWS Goodland appreciates all of our partners who helped advertise for this year's training season! Across all of the training courses, NWS Goodland is proud to say we have over 400 freshly trained storm spotters ready to keep an eye on the sky!

If you or someone you know was unable to attend a spotter class this year, you can take an online course anytime by visiting: https://www.meted.ucar.edu/education_training/course/23. For additional spotter resources, including a digital version of the NWS Weather Spotter's Field Guide and safety information for hazards, visit: <https://www.weather.gov/gld/2023-spotter-training>.



Lead Meteorologist Jesse Lundquist teaching the Logan County class.

Useful Links

- Storm Prediction Center
 - www.spc.noaa.gov
- Weather Prediction Center
 - www.wpc.ncep.noaa.gov
- Climate Prediction Center
 - www.cpc.ncep.noaa.gov
- Climate Data
 - www.ncei.noaa.gov
- CoCoRaHS
 - www.cocorahs.com
- Space Weather
 - www.swpc.noaa.gov
- SciJinks
 - scijinks.gov/



SKYWARN

Contact Us

National Weather Service

920 Armory Road
Goodland, KS 67735

Phone:

785-899-7119

Fax:

785-899-3501

E-mail:

w-gld.webmaster@noaa.gov

Website:

<http://www.weather.gov/gld>

Facebook:

<http://www.facebook.com/nwsgoodland>

Twitter:

<https://twitter.com/NWSGoodland>